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A SPRING TOUR IN NORWAY; WITH NOTES ON THE BIRDS OBSERVED THERE.

BY F. S. MITCHELL.

It was on the 14th May that, in company with my friend Mr. Wrigley and a Norwegian guide and collector named Lysne, I landed at Orkedalsoren (Nervig), on the Trondhjemsfjord, on the way to the Dovrefjeld, where we proposed spending most of our time. We had arrived at Trondhjem in the 'Tasso' from Hull on the morning of the 12th, meeting Lysne the evening of the same day, he having come up by coasting steamer from Lærdal. Losing as little time as possible in getting our money changed, &c., we started off at once for the interior. Our route lay through Orkedal and Meldal, past Grut to Bjærkaker, where we joined the main road from Trondhjem; thence by Austberg to Stuen, and so past Aune, Drivstuen, and Kongsvold to Jerkin and Fokstuen.

The summer was one of the latest for many years, and everything was covered with ice and snow. The only birds to be seen on our landing were large flocks of Ducks, floating, shy and watchful, at the river's mouth, Ringed Plover and Oystercatchers on the links, and Bramblings and Pied Flycatchers in the woods; so that at first, as our time was limited, the prospect was rather gloomy. Things improved, however, and in the Fokstuen valley we had quite enough of sun and of the insects that disported themselves in its rays. Very little was seen of the big game of the country, no Bears, and no Reindeer, although at Jerkin we had a long walk after a herd of six that had been seen to cross the valley

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lower down. Wolves, however, were common about this place, and the birch-woods were full of their tracks. One night we had a great chase after a big fellow that had approached the steadings, toiled after him with the rifle about two miles up a hill-side, through knee-deep snow, but only had our labour for our pains, for he wouldn't let us come within shot. A little boy had had one threatening him the day before, on the road a mile or so away from the station, and had much ado to keep it off by shouting and throwing stones; and a friend, whom we met here accidentally, came suddenly on another, snarling and snapping in the middle of a lonely wood. Not being armed with any more trenchant weapon than a walking-stick, he politely retired backwards and stepped into a deep bog, from which he had considerable difficulty in extricating himself. Red Foxes were seen several times by the side of the road.

We had, unfortunately, to leave for home on the 16th of June, and were thus unable to wait for the nesting of many birds, whose eggs we could assuredly have procured but for want of time. Having given ourselves the least possible margin to catch the steamer at Christiania, we had to carriole nearly night and day to Lillehammer, where we took the boat down the Mjösen lake to Eidsvold, the railway terminus. Naturally, under conditions of this sort, there was very little recourse to the note-book.

The following are the notes we made on all the species of birds met with during our tour:—

Golden Eagle. *Aquila chrysaëtus.*—At Grut, in Meldal, we procured an unblown egg of this species, taken the year before from an eyrie in the neighbouring mountains, at which time both birds had been shot for the sake of the half-dollar which is paid by the Government for the destruction of all the larger birds of prey. The man who killed them paid a visit to the place before our departure, but there were no fresh tenants. This he did in the early morning, before anybody was up; we suppose because he was afraid we might cause him to be forestalled in the event of a future occupancy; we could not be vexed with him as he was hardly *compos mente.*

Merlin. *Falco æsalon.*—While I was slung over the cliff after the Rough-legged Buzzard on the Dovre, June 13th, a male Merlin flew past me, the only one observed.

Kestrel. *Falco tinnunculus.*—A nest was taken from a wood between Fokstuen and Dombaas on the 30th May. It was in a pine, was lined with wool, stuck together with mud, and looked very like the architecture of a Hoodie. There were seven eggs, sat, the hardest a week.

Goshawk. *Astur palumbarius.*—On May 19th, at Grut, we procured five eggs of the above, hard sat. The nest, which was of great size, and had evidently been used for many years,—the new on the top of the old,—was half way up a tall pine, in a thick wood, on low ground, close to the River Orkla: it was composed of sticks, and lined with green pine-tufts, the eggs being laid on scraps of bark on the top of these. The ground round the tree was completely covered with bones, mostly of the various Thrushes. As we approached the old bird got off, and hovered screaming above the wood, where she was soon surrounded by a host of croaking Hoodies; it was amusing to see how they scuttled out of the way whenever she made a feint at them. She allowed us one shot at her, as she made a dash over the nest, but was missed.

Sparrowhawk. *Accipiter nisus.*—We never saw this hawk after landing, but on May 11th, whilst crossing, one alighted on the steamer, quite exhausted, and spent the night perched on the rigging. It would permit approach within arm's length, and could easily have been knocked down with a stick.

Rough-legged Buzzard. *Archibuteo lagopus.* — Saw a pair between Fokstuen and Jerkin, hovering about a big cliff, on June 3. They looked beautiful, floating between us and a bright sun, their white wing-feathers seeming almost transparent. Evidently they were breeding, as their anxious proceedings and the continual uttering of their alarm whistle whenever we went near the place plainly showed; but, to the discredit of our perception, as it turned out, we thought they were only just getting the eggs nicely laid, and so left them for a while. On the 15th, however, we started for the place, with all the available hide-rope in the valley, and whilst one end of this was held at the top of the cliff, I at the other, explored all likely places. There were three or four old nests, and it was some time before the right one was hit upon. Great was the disappointment, and inexcusable the language, when a faint whistle proclaimed young, and there they were, on a platform of sticks—three white downy lumps, with pale yellow legs and bill, the youngest only a day or two out of the shell: this the reward for a stiff, hard climb, the loss of a considerable quantity of blood from mosquito-bites, and the wearing out of the soles of a remarkably good pair of stockings. Woollen stockings, by-the-bye, are capital things for rock-climbing, don't slip, and have a good grip; they are only inferior to the skin slippers the Færoe men wear. We shot both old birds, and tried to keep the young alive, but they severally succumbed to carriole- and steamboat-travelling, and the last died just in sight of England.

Eagle Owl. *Bubo ignavus.*—We never observed this ourselves, but at Grut procured two fine skins, the birds having been shot there the year before.

Snowy Owl. *Nyctea scandiaca.*—It was the 17th of May when we arrived at Grut, and during the evening Wrigley, amusing himself by climbing to all the Magpie's nests in the neighbouring trees, came down from one with two large white eggs in his hands, which Lysne, an experienced man on this species, pronounced Snowy Owls. He went into the village to seek for information on the subject, and came back before long with a grin from ear to ear: he had found the man who had put them there, the fellow having come across them, veritable "Snee-uggla," when crossing the mountains the previous year. He had kept them twelve months, and then, thinking he would like to educate some young Owls, put them in the Magpie's nest to be hatched. A skin, too, that we got from a farmer here, when overhauled at home, was found to be stuffed with soil, and so quite rotten. One was heard, at night, when we were at Drivstuen, and here was seen the only live Lemming we came across; their skeletons were in scores.

Pied Flycatcher. *Muscicapa atricapilla.* — Seen in numbers at Nervig, May 16th, and eggs were given us by Herr Nissen of this place (who showed us much kindness in many ways), taken in Orkedal. None were observed after we had got on the higher ground.

Fieldfare. *Turdus pilaris.*—These were very few in number on our arrival at Nervig, but the migratory bands were continually arriving, and we met them in increasing flocks by the side of the road as we drove into the interior. One spent the evening of May 10th on the steamer, when two days out from Hull. Our first colony of breeding Fieldfares was met with in a wood near Dombaas on June 4th, but a fortnight after this there were many pairs only building. All the wood close to Fokstuen is birch only, and here they bred in large numbers; but five or six miles away pine is largely mingled, and where this is so the latter appears to be preferred. The nests were at heights from the ground varying from three to fifteen feet, and the most common number of eggs four, though some had six, and one seven; this last an extraordinary number. One nest was by itself in a low willow bush in the middle of the marsh.

Song Thrush. *Turdus musicus.*—A single nest was taken near Dombaas, June 10th, containing five eggs, hard sat. It was low down in a young pine.

Redwing. *Turdus iliacus.*—We saw very few of this species till we found them nesting on the Dovre, and even then they were in no great numbers. The first nest was discovered May 30th, was low down in a small pine, and contained two eggs. The nests are generally very near the ground; one taken near Jerkin on June 11th was quite so, under a small bush, and contained two young birds and two unhatched eggs; another near Fokstuen, June 7th, was on a stump close to the ground under a bush, and had two eggs, whilst a third, on the same day, was in a young birch, one foot from the ground, with six eggs, about ten days sat. I shot the hen from a nest containing three eggs, which was eight feet high in a birch, a very unusual position; this was on June 4th. The Redwing is very shy and hard to approach, except when it has young; then it is bold enough, and both parents will hop, and flit, and chatter round you as anxious as any birds need be. It would take an old hand to separate a mixed lot of Fieldfares', Redwings', and Blackbirds' nests; they appear to be constructed of exactly the same materials, and to be of the same shape and size.

Ring Ouzel. *Turdus torquatus.*—A male was seen June 8th, in a gully through which a brook ran, near Fokstuen.

Red-spotted Bluethroat. *Cyanecula suecica.*—This bonny little warbler was fairly numerous at Fokstuen, there not being so many at Jerkin, and its sweet and varied song was to be heard every day as we wandered about among the bushes on the edge of the marshes, the performer perched on the highest twig it could find. We were only lucky enough to find one nest, and that quite by chance. We saw it when building, and thought it was a Titlark's, but accidentally looking at it as we passed a few days after were agreeably surprised to find two of the well-known eggs of the Blue-throat in. It was deep, and made of dried grass, lined with finer bits, and was in the side of one of a great number of small bush-covered mounds, lying near together in quite a dry place. At first it was easy to see, but as more eggs were laid it was carefully and effectually concealed by matting the grass all round it. We took it on June 11th, when it had six eggs, as we were going to Jerkin for a few days, and were afraid to leave it for the chance of another egg. The old bird was a great skulker; we tried a surprise many times, but could never catch a glimpse of her, and only heard her once.

Redstart. *Ruticilla phœnicura.*—Wrigley took the first nest on June 12th, from a hole in a birch-tree near Jerkin; there were seven fresh eggs. The day the Buzzard was taken, June 15th, I was completely deceived, when, scrambling through the birch-wood, a little bird started from under my feet, and popped away with a flirt of a red tail: hurrah, a Blue-throat! excited search, and grand discovery of five blue eggs in a feather-lined nest under a tree-root. Melancholic remembrance that more birds than Blue-throats have red tails. From a hole in a tree one day I extracted a dead mouse with a Redstart's egg sticking to it; retribution would appear to have overtaken a robber here.

Whinchat. *Pratincola rubetra.*—Only one observed, and that a male, shot between Fokstuen and Dombaas, May 31st.

Wheatear. *Saxicola œnanthe.*—First seen at Fokstuen, May 30th. Numbers frequented the low hills round about.

Willow Warbler. *Phylloscopus trochilus.* — Only one was observed: shot on Fokstuen Marsh, June 4th.

Northern Marsh Titmouse. *Parus borealis.*—A nest of this species was taken in the middle of a thick pine-wood at Grut on May 15th. A small round hole was bored in a rotten tree-stump about four feet from the ground, and six fresh eggs lay about six inches deep in the interior. The nest was made of thin strips of bark, and the eggs, as is the custom with many of the Tits, notably *P. major*, were covered.

White Wagtail. *Motacilla alba.*—Seen about all the villages and station-houses from Nervig onwards, but either they had not begun to build or we couldn't find the nests. One nest of five eggs was taken from a crevice in the timbers of Fokstuen station on June 10th. It was composed of hay and moss outside, thickly lined with finer bits of hay and Lemming-fur. Another was stuck on the extreme end of a projecting timber in an old boat-house; it was found when building, but the old birds saw us about it, and deserted it.

Gray-headed Wagtail. *Motacilla viridis.*—First seen between Fokstuen and Dombaas, May 31st. They did not appear to have commenced breeding before our departure. On June 11th, near Jerkin, we found a nest in process of building, on the banks of a stream, the old birds being about it.

Meadow Pipit. *Anthus pratensis.*—Very numerous on Fokstuen marsh; fresh eggs were taken from June 10th.

Lapland Bunting. *Plectrophanes lapponicus.*—A fine male was shot on Fokstuen marsh on June 9th, but no nest was discovered till the 14th, when four eggs, a few days sat, were obtained. Before the end of the next day two more were found, containing respectively six and seven eggs, all fresh. The nests were in each case formed of dried grass, lined with feathers, and placed in depressions of the ground under small bushes; one of them had all the feathers in the lining from the axillaries and under wing-coverts of Snipe, and looked very pretty. The birds sit very close, and when disturbed run about among the bushes, chirping very vigorously within a few feet of you, the male always appearing almost immediately, and making a duet.

Snow Bunting. *Plectrophanes nivalis.*—On May 26th we crossed the mountains between Kongsvold and Jerkin, the highest point of the road, and here saw our first flock of Snow Buntings; they were very wild, and would not allow of a nearer approach than fifty or sixty yards. Some were shot on the 28th at Fokstuen, but the snow now began rapidly to disappear from the hills, and none were seen after June 2nd, though we several times visited the tops of the highest hills within several miles in search of them.

Reed Bunting. *Emberiza schœniclus.*—Plentiful on Fokstuen marsh. A nest with four eggs was taken on June 15th from the ground under a bush. It was made of straws and lined with hair.

Brambling. *Fringilla montifringilla.* — Was seen on our arrival at Nervig, May 14th, where they were in pretty numerous flocks. Its curious note (which the Starling imitates to a nicety) had accompanied us all along the road, and it was with great pleasure that we heard this exchanged for the sweet song with which the male serenades his mate as she sits occupied with her motherly duties. The first nest was taken on June 6th, and in the week following a considerable number were discovered. These are usually placed in the birch trees at heights of from four to eight feet, and the number of eggs never more than four. They are composed mostly of fine straws and bents, mixed with moss and lichen, a layer of still finer bents being put in as lining, over which is a final layer of feathers.

House Sparrow. *Passer domesticus.*—A few were seen about the station at Aarlivold as we passed through on May 17th, and several old nests were stuck among the timbers, but this was the only place we noticed it north of the Dovrefjeld.

Hooded Crow. *Corvus cornix.*—These were very numerous at Nervig, feeding on the enclosed land, as a lot of Rooks might do, and one nest was taken on May 16th by Wrigley, there being four eggs, a little sat upon, in a small tree on an island at the mouth of the River Orkla. We found them as far as Drivstuen, but never saw them on the Dovrefjeld.

Magpie. *Pica caudata.*—Common everywhere; numbers of nests in the trees along the streets of Trondhjem, and close to boxes placed for the reception of Starlings. At Nervig was one within three yards of the ground, and at Jerkin we noticed one built among a heap of sticks reared against the barn-wall. At the former place, on May 14th, we took a nest of seven eggs, and there were many more nearly as far advanced. A nest near Fokstuen station-house was about eight feet from the ground in a small birch, and whilst in process of building was quite inaccessible from the melting snow forming a swampy lake round it, but when all this went it was left high and dry, and we visited it every morning to remove the newly-laid egg. She deposited seven, the last on June 10th, but would do no more for the furtherance of oological science.

Jay. *Garrulus glandarius.*—Two pairs seen at Grut, May 18th, the only ones observed.

Siberian Jay. *Perisoreus infaustus.*—When driving through the thick pine-woods between Austberg and Stuen, May 20th, a Siberian Jay crossed the road in front of us, but the guns happening to be packed up she went on her way rejoicing.

Great Black Woodpecker. *Dryocopus martius.*—On May 21st we had not left the station-house at Stuen above ten minutes when in a tall pine we descried a big hole, evidently the work of a Woodpecker. Two of us went back for a ladder, and whilst carrying this to the place the gun went on, and on our arrival Wrigley triumphantly pointed out a Great Black Woodpecker, shot just at the hole, and still clinging to the bark with its claws. It was the male, and its mouth and throat were found to be crammed full of ants; the latter being distended with them gave it a very grotesque appearance. The hole was about twenty feet from the ground, square at the bottom, but concave at the top, and about four inches across. About twenty-two inches deep were four well-grown young, which would probably have been flying in a couple of weeks. Two of them had incipient red feathers down to the base of the bill, and two with them only on the occiput, so the sexes were probably divided. The female was shot in the evening, as she tarried disconsolately near the place. The irides are a pale yellow. At Grut we procured the skin of a female killed there last season, and in a thick birch-branch near Fokstuen, on June 7th, we found a hole evidently, by its peculiar shape, dug out by this species, the other Woodpeckers all drilling a round one.

Green Woodpecker. *Gecinus viridis.*—Not fifty yards from the tree last described we saw a round hole, about thirty feet from the ground, in another big pine. The ladder was fetched, but unfortunately was too short; however, it was reared straight up against the tree, fastened firmly round the trunk at the top, so as not to slip, and mounted by the writer, who, having wedged his legs in the topmost rungs, commenced the operation of enlargement with hammer and chisel. The position was so awkward that, to get through the one inch and a half of sound wood and the two inches of rotten, took above two hours' hard work, but the seven fresh eggs laid on the bare wood inside, eighteen inches below the hole, were sufficient compensation for cramped legs and half-broken back. Whilst this was going on, first the female and then the male Green Woodpecker came jarring to the top of a neighbouring tree, and were both shot. The irides were pinkish.

Great Spotted Woodpecker. *Picus major.*—Two were seen in the same wood in which we got the Goshawk, and on the same day, May 19th.

Lesser Spotted Woodpecker. *Picus minor.*—Not observed till we reached Fokstuen, where several were shot in the early part of June. On the 6th a nest of four eggs was taken from a hole in a small birch; they were quite fresh.

Three-toed Woodpecker. *Picoides tridactylus.*—A male was shot on June 6th in the birch-wood near Fokstuen.

Cuckoo. *Cuculus canorus.*—First heard at Jerkin, May 27th; a few remained about Fokstuen till our departure.

Swallow. *Hirundo rustica.*—One seen at Drivstuen on May 25th; the first and only one north of the Dovrefjeld.

Martin. *Chelidon urbica.* — None seen till we arrived at Jerkin, where on May 27th they commenced to build. On the 28th, when we arrived at Fokstuen, they were also building under the eaves of the station-house, but there were no eggs at the date of our departure.

Capercaillie. *Tetrao urogallus.*—Wandering about on May 18th, at Grut, without the guns, we came across the only ones we saw, a male and two females, perched in a thick clump of pines; there was a tremendous clatter when they took to flight.

Black Grouse. *Tetrao tetrax.*—Never saw but one, and that a male, near Nervig, on May 15th.

Common Ptarmigan. *Lagopus mutus.*—Very few seen, compared with that next described. The last was shot at Fokstuen, May 29th, a male, the birch-wood being still deep with snow.

Willow Ptarmigan. *Lagopus albus.*—Very numerous in the Fokstuen valley, though none were observed till our arrival there. The first was shot May 29th, and all killed after this were in full breeding plumage, except a male on June 7th, which had a still white breast, and a number of white feathers on its back. A nest of six eggs was brought in by a boy on the 14th.

Golden Plover. *Charadrius pluvialis.*—A flock of about forty seen at Drivstuen, May 22nd, and very numerous about Jerkin on the 26th, all with full black breasts. The second week in June there were several pairs on the hills about Fokstuen, nesting, without doubt, but we had no time to spare for them.

Dotterel. *Endromias morinellus.*—There were not many flocks of Golden Plover at Jerkin and Fokstuen but had one or more Dotterel among them, and they could be seen any day on the enclosed land near the station-houses. A single pair were seen together on May 30th, between the latter place and Dombaas, but we had other birds then to look after.

Ringed Plover. *Ægialitis hiaticula.*—Numerous at Nervig, on the links at the mouth of the Orkla, in full breeding plumage, but not seen after our departure thence on May 17th.

Oyster-catcher. *Hæmatopus ostralegus.*—The remarks on the species last described might be re-written for this.

Crane. *Grus communis.*—On coming in to one of our meals at Fokstuen on June 15th we were told that a Crane (Trauen) had passed over the house: we had a long walk in the direction it had taken, but our eyes were never gladdened by a sight of it.

Common Redshank. *Totanus calidris.*—First observed May 28th between Jerkin and Fokstuen, and on June 8th some half-dozen were seen feeding near one of the pools on the marsh. They did not appear to be very plentiful, and we did not take any eggs ourselves, though on June 14th a boy brought in a nest of three.

Wood Sandpiper. *Totanus glareola.*—This, next to the Snipe, was the commonest species of the waders on the marsh, but somehow or other the nests were difficult to find. We only had the luck to get one, containing two eggs, on the 5th of June. It consisted of a rather deep depression with a few straws at the bottom, and the grass turned round and interwoven a little at the top, and was on a small grassy tussock.

Common Sandpiper. *Totanus hypoleucus.*—Two pairs were seen on the banks of the River Driva at Drivstuen, May 22nd. One of these, being shot at, was only winged, got into the water, and swam away very vigorously out of reach.

Ruff. *Machetes pugnax.*—A male was shot on Fokstuen marsh on June 9th, the ruff and caruncles being fully developed.

Great Snipe. *Scolopax major.*—We did not see this species before June 9th, at Fokstuen, though during the night, at Jerkin, they were often heard. Three nests, each with four eggs, and all about a week sat, were obtained on the 13th, 14th, and 15th of June; they consisted of slight depressions on stumps in open wet places, with a few straws at the bottom.

Common Snipe. *Scolopax gallinago.*—These were exceedingly numerous on the marshes, and scores might be seen and heard drumming away at the same time. The first eggs were procured June 2nd; these were a few days sat, and none that we got during our stay were entirely fresh, always four in number, and the slightest possible nest. In Faroe, in 1872, I took the most elaborate Snipe's nest I ever saw. It was as round as a Blackbird's, and as deep, constructed very neatly of dry bents, and well buried in tall grass; there were four eggs, half-hatched, the date being the 9th of June, and the bird was secured as she limped away with trailing wings.

Broad-billed Sandpiper. *Limicola platyrhyncha.*—On the morning of June 9th we had started from Fokstuen station-house for an exploration of the hills on the other side the marsh, and had not left it half-an-hour when a little Sandpiper that I did not recognise, got up from under my feet, was shot, and, hurrah! —proved to be a Broad-bill! It was at once decided to leave the hills for the marsh, and thither we accordingly went. Before very long four eggs were found, and so one of the prizes we hoped to get was secured. This nest was not on a tump, but a damp, grassy place, in a dry spot almost level with the mud, and consisted of a round, deep hollow filled with dry leaves of the mountain willow, whose brown colour coincided almost exactly with that of the eggs. On the 11th, at another marsh half-way to Jerkin, on which there were no willows, we took four eggs from a nest composed of dry grass simply, and which was a slight depression on a small tump surrounded by water. The colour of these was very much lighter than the first, more like a Dunlin's. Willow-leaves were not invariably used, even where they were plentiful, as was proved by a nest taken on the 14th from Fokstuen, composed solely of straws. Two others had both leaves and straws mixed, and the rest were like the first in this respect. It was curious that those nests lined with leaves contained the darkest eggs, and those with straws the lighter-coloured ones. The number was invariably four, and these were all fresh, or nearly so, in the seven nests we took, between the 9th and 15th. The open spaces of the marsh appeared to be preferred, where it was free from bushes, and the ground very soppy and wet. The birds in all cases were very tame, would not get off the nest till nearly trodden on, alighting only a few yards away, and running about among the tumps with an occasional subdued half-chirp half-whistle. The male is never far away, always ready to join his mate if she leaves the nest. Irides and legs dark brown. During the last week of our stay a lot of our best working ground was spoiled by a party of German gentlemen, who, in passing Fokstuen, announced that they were on their way to the North Cape, but unfortunately took it into their heads to have a little sporting at Jerkin. Every stream was netted, every marsh within several miles shot over, and it was very annoying to find on some cherished tit-bit of bog a lot of empty cartridge-cases scattered about.

Red-necked Phalarope. *Phalaropus hyperboreus.*—Was first seen on May 28th, near Fokstuen, where we afterwards found them in considerable numbers. We tried hard for the nests, but never found one, and doubt if they had begun to lay.

Shoveller. *Spatula clypeata.*—A boy at Fokstuen, June 13th, brought in six eggs, with the down from the nest. Mr. Harvie Brown has courteously examined these, and pronounces them to be of the above species. The average size of the eggs is $2\frac{7}{64} \times 1\frac{29}{64}$ inches.

Teal. *Querquedula crecca.*—Plentiful at Fokstuen. A nest of eight fresh eggs was taken on June 2nd, on marshy ground close to the water, and sheltered a little by a stick arching over. Another, with nine eggs, a few days sat, was taken on the 13th.

Scoter, *Oidemia nigra ;* Velvet Scoter, *Oidemia fusca ;* Scaup, *Fuligula marila.*—These all appeared on the marsh on June 2nd, in considerable numbers, but no eggs were taken by us. Our German friends, mentioned above, had completely demoralised the ducks.

Long-tailed Duck. *Harelda glacialis.*—One seen flying over Fokstuen early in June, the only individual observed.

Red-breasted Merganser. *Mergus serrator.*—A male was brought to us at Grut on May 19th, shot on the river with a rifle-bullet through its neck.

Black-throated Diver. *Colymbus arcticus.*—A pair were seen on May 28th, whilst driving from Jerkin to Fokstuen, one of the large lakes by the road-side having got the ice away from about one hundred square yards of its surface. They were left alone in the hope that their eggs might be secured, but were never seen again.

Lesser Black-backed Gull. *Larus fuscus.*—One seen on June 8th, flying over the marsh opposite Fokstuen.

ON THE MIGRATION OF BIRDS.

By John Cordeaux.

In the last part of the 'Ornithological Miscellany,' under the heading of "*Hirundo rustica*," Mr. George Dawson Rowley has propounded an original and startling theory on the migration of birds, a theory which reduces the bird itself to little more than a passive agent, and the act of migration to a great mundane law requiring the exercise of no intelligence or instinct: the so-called migratory impulse being a blind force, like other forces in Nature,—a mere material force impelling the bird forward without any act of will or instinct. To quote Mr. Rowley:—"My idea about finding the way is this; the bird has as much to do with it as a man starting from London to York by the railway. He finds his way, steam conveys him; wind takes the bird. If the steam blows up, the passenger is killed; if the wind changes, the bird dies." Again, "The bird starts on its journey; after it has set forth it is ruled entirely by circumstances of which wind is the chief . . . As a ship is ruled by the wind, so is the bird. The bird is a sailing ship, the tail is the rudder, and it is governed by the wind; and this is how it finds its way, just as seeds find their way," *i.e.*, seeds conveyed by ocean currents to distant shores, or from one field to another by the wind.

From Mr. Rowley's theory I am obliged entirely to dissent; for I am satisfied that birds are not guided by the wind. The migratory instinct, or by whatever name we choose to call it, is not a blind force; it is an actual and wonderful intelligence, an instinct hereditary in the bird itself; an instinct called into play by various causes, food, vicissitudes of climate, sexual love; an instinct which has been in force, handed down through countless generations of birds, slowly modified from time to time by such circumstances as a gradual change of climate, or changes in the distribution of land and water,* but still an instinct mighty and all-sufficient for attaining its special object.

Birds are not mere automata, they are something more than this; we are much too apt to consider them from our own peculiar standpoint; we argue about them, their habits and movements, as we do also about other animals, from our own experience. What man cannot very well do with his boasted intelligence, the bird cannot do, forgetting that there is no analogy to be drawn between the two cases. Where we find a race of creatures adapted for long flights, and which have undoubtedly for an enormous period of time, twice in each year, been accustomed to migrate to and fro across the earth's surface, we may be well satisfied that they must possess in a high degree in their own special organisms the qualifications for the work—qualifications and powers which have altogether been lost or are merely latent in man himself. Mr. Rowley says:—"Those who hold the opinion that birds migrate by instinct should read the convincing chapters on the way Indians travel through unknown forests (Wallace's 'Natural Selection,' p. 206, *et seq.*), which proves that man does not possess instinct, neither can any one find his way in an *unknown* forest. I contend, then, that what man with intelligence is unable to do, birds must fail to accomplish."

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* Before the enclosure and drainage of the Lincolnshire Fens enormous flocks of various wild-fowl visited the east coast every autumn in incredible numbers. At these times we are told a flock of wild ducks was observed passing along from the N. and N.E. into the East Fen in a continuous stream for eight hours together. Since the drainage and reclamation of the Fen lands the wild fowl have practically deserted our coast, the great migratory stream now passing down the opposite coast of Holland, our principal supply of wild fowl coming from that country. In the shallow waters of the Zuyder Zee, during the autumn migration, the sea is sometimes black for many miles with various ducks. Last year, during the first week of November, immense flocks of swan, geese, and ducks passed Heligoland.

Now I repeat that there is no analogy between the two cases, and that even if it can be shown that man cannot find his way in an unknown region, which I very much doubt, it is really no argument against the bird or other animal not being sufficient for the purpose.* Animals do find their way in some extraordinary manner, by a sort of intuitive instinct, which almost seems like a sixth sense. We have repeatedly, in our own experience, met with remarkable instances in domestic animals—cows taken from their calves, mares and horses from their foals or a favourite pasture, also with dogs taken long distances from home, even by rail—finding their way back again by an entirely new route, and across a perfectly *unknown* country. One remarkable case I remember of a young horse and mare swimming a great tidal river, or arm of the sea, several miles in width, to get back to their old quarters, which they succeeded in doing. By what power, instinct or intelligence they accomplished this I am unable to say, certainly not on the same principle as seeds are carried by ocean currents, or blown from field to field. Before setting forth on the migratory journey, birds often collect together in large flocks, the species and even the sexes keeping distinct: this shows arrangement, a plan, a special course of procedure—a preparation for the great event shortly to come off. That birds too, under certain circumstances, should delay their flight waiting for a more favourable wind, shows a high degree of intelligence.

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* Mr. Rowley, I think, has not comprehended Mr. Wallace's remarks, to which he refers in the above passage, so far indeed as I can form an opinion. What Mr. Wallace says of the so-called "instinct" of Indians and other savages in finding their way is that it is the effect of continued observation (aided by inheritance of the faculty) carried on so as to be quite unconsciously exercised. This is really very like the "instinct" of migratory birds.

An experience of more than twenty years close observation of the habits and manners of birds, more particularly in connection with their annual migrations, has led me to the conclusion that they not only possess far more intelligence than we usually give them credit for, but also know how to make the best use of this intelligence. They do not move in a groove, and are not the mere blind subjects of a great mundane law which Mr. Rowley would seem to infer.

It is a well-established fact that the same birds, both during the vernal and autumnal migration, do return in a great number of instances to the same place. The cases indeed recorded are so numerous that I have difficulty in making a selection. The well-known fact of a Wagtail's nest being built year after year in a particular place, and of a Cuckoo laying her eggs in that nest almost year by year, is one instance. Perhaps, however, the most remarkable case is that mentioned by Mr. Stevenson ('Birds of Norfolk,' vol. ii., p. 55), and previously recorded by Mr. Hewitson ('Eggs of British Birds,' vol. i., p. 209), on the authority of Professor Newton, of a pair of Stone Curlews continuing to resort, year after year, to nest in one particular place (though it was entirely changed in character), long after it, and many acres around it, was planted with trees, and had become the centre of a flourishing wood—namely, the Warren Wood of Elveden, near Thetford, which extends over more than three hundred acres.

In Professor Newton's new edition of Yarrell (p. 565, *note*), another curious instance is given in the case of several pairs of the Yellow Wagtail (*Motacilla Raii*) returning year by year to nest in the same haunts, some heathery mounds bordering a stretch of wet meadows on the left bank of the Little Ouse, below Thetford. The whole passage may be commended to the reader's notice.

At the Ashby decoy, Lincolnshire, a particularly marked duck, having a white throat, was known to come in eight winters in succession, and another, a spotted duck, for four or five years. These, and numbers of other cases, which time and space will not permit me to cite, prove most undoubtedly that birds do return year by year to the same spot.

On the east coast of Lincolnshire the arrivals of various species, during the autumn months of September and October, are so regular that they may be readily tabulated and predicted to a few days. The same phenomena may be observed, and with even greater certainty, at Heligoland during the periods of the vernal and autumnal migrations. No matter how the weather is at each particular periods of arrival, calm or strong, thick or clear, the birds come, and come, too, with marvellous regularity. They are scarce or plentiful as the case may be, for the abundance or scarcity of migrants at any special locality is due more or less to the state of the weather during the period of passage. The most favourable circumstances for birds passing the sea are calm still periods, or a light breeze, dead ahead, or a few points free. A head wind that is not too strong is the very thing birds like best, but failing that, a "beam wind," to use a nautical expression, seems to be the best. A wind on their quarter, or one aft—that is, having to fly before the wind, particularly if strong—is objectionable; it ruffles up their feathers and otherwise impedes their flight, soonest tiring them out. The consequences of unfavourable winds are that the birds alight on the first coast they reach for rest: under favourable circumstances they would have passed forward far overhead and unseen. Just as a man, fatigued by an arduous or difficult journey, pauses to rest on the way, so the birds alight for rest and quiet; within twenty-four hours, however, they are off again, each to its especial goal in forest, field, marsh, or sea-coast—a goal which it was their steady, predetermined, purpose to reach when they first took wing from the lone *tundra,* or ice-girdled shore, in the far-away north. They trusted to no aërial currents to guide or drift them passively towards the sunny south, as seeds in the wash of the equatorial currents to the Hebridean shore, but to their own instinct and intelligence—an instinct which thus far has never failed. According, however, to Mr. Rowley, birds have neither impulse nor instinct: they are purposeless creatures with no will of their own, and the sport of every puff of wind. To carry out, then, this theory we must undoubtedly assign to the winds a far greater constancy than they are usually supposed to have, or than anemometers will justify us in supposing them to possess. The hypothesis is as wild as the wind itself. Nothing, indeed, is more variable than the wind—nothing more variable than the wind during the vernal and autumnal equinoxes, when birds must migrate—blowing, as it does, from every point of the compass in twenty-four hours. Were the birds' movements mainly dependent on air-currents, and air-currents only, we should rarely—although Mr. Rowley assumes the contrary—have year by year the same phenomena occurring at any given locality on our east coast. The arrival or non-arrival of immigrants being dependent on one of the most variable of causes, the results would also be variable, whereas the contrary is the case.

Wind, I am convinced, except in some very abnormal instances,* as great gales and storms, has little to do with the normal phenomena of migration. All animals and man himself undoubtedly prefer favourable weather for travelling; but although they may delay, they do not put off their travels altogether because wind and weather are unpropitious.

Continuing his subject, Mr. Rowley says there is one thing in common between the migration of the seed and the bird—"once started they do not come back till the journey is finished." Does Mr. Rowley seriously wish it to be inferred that any comparison can be drawn between the two phenomena—the one thing an inert mass, the play of wind and current; the other a living, highly endowed organism. The seed returns not by the same path because it *cannot*, the bird because it *will not*. Birds are occasionally, however, known to turn back in their migratory journey when they find they have made a mistake. Several instances are on record of migrants during the autumn being seen away off the mouth of the Channel and over the Atlantic, apparently migrating in the wrong direction: they are probably such as on dark foggy morning have overshot the mark, and at daylight discovering their error, are making their way to the nearest land.

There is also the case mentioned by Mr. Stevenson ('Birds of Norfolk,' vol. i., p. 413 *et seq.*) of the Red-legged Partridges in Norfolk migrating out to sea and again returning. Had the birds in these instances migrated on Mr. Rowley's theory, and not by their own instinct, they ought to have kept going in a direct line without coming back. In fact, on Mr. Rowley's hypothesis, we do not quite see why the bird, once in full migratory swing, should stop again till in the natural course of events it flies itself to death. Compared with the drifting seed, it is positively at a disadvantage, having no sea coast to bring it up: like that marvellous mechanical leg we read of somewhere, which when once wound up and started could not be stopped again, so the bird ought to keep going—aimlessly and purposely, perhaps—but still going.

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* See 'The Field,' March 11th and 18th, 1876, "On some Abnormal Migrations of Birds."

It is a well-ascertained fact that the young of the year of many birds migrate before their parents, and in separate flocks; these have never travelled the route before, and how they find their way over these thousands of miles of sea and land seems a very puzzling problem. It is a curious fact that although the young come in separate flocks, we constantly find an old bird or two—usually old females—amongst them, so that the young may to some extent be in leading strings. As most birds, however, travel by night, and on very dark ones too, they cannot trust to guidance alone, and they are not able to make use of such landmarks as prominent capes and headlands. They come much as did the old sea rovers,—without chart or compass, "by rule of thumb,"—certain to hit the land somewhere, and when once the land is seen knowing all will be right. With the wonderful vision birds possess, and the great height at which they usually travel, they would be able, much more readily than we suppose, at early dawn to distinguish known features of land or sea coast (supposing them to have travelled the route before) at, to us, immense distances. Nor would their inherited instinct, I believe, fail under any circumstances, whether in young or old, to bring them to their goal.

As a familiar instance of this inherited instinct in birds we may cite the case of the Common Partridge. How is it, except by this, that Partridges, having had no actual experience for many generations of the real Kite or Buzzard, cower or rush at once to the nearest shelter when the paper kite's "shadow saileth across the open shaw"? Some years since, when the telegraph-wires were first carried across the Lincolnshire marshes, Partridges and Plover were constantly picked up killed by flying against the wires; now, after the lapse of some years, this is rarely if ever the case, the generations of Partridges that witnessed this immolation of their comrades has long passed away, yet the present birds have learnt through this same hereditary instinct to avoid the danger.

Instinct is one thing, the migratory impulse another: we must also take into account, when considering the migration of birds, except the very young, the wonderful powers of memory displayed by animals. Those who are accustomed to ride and drive much, must have noticed how rarely a horse forgets any road he has once travelled, or any house he has stopped at, it may be years previously. Out of many instances, I will mention one of this memory in birds. In 'The Zoologist' for 1875, p. 4698, Mr. Nicholls, writing from South Devon, mentions the case of a young Herring Gull taken from the nest in May, 1871, and brought up in a state of domestication. In May, 1872, it left its quarters, and was given up as entirely lost, but, strange to say, in November, 1873, it returned, then in beautiful plumage, and allowed its old friend and playfellow, a little boy of eight years old, to take the same familiarities with it as formerly.

The migratory seasons are undoubtedly the most important periods in the life of a bird: without these regularly recurring periods life would be impossible for them; their existence and the continuation of their race is dependent on these annually recurring voyages through the air. If, then, the instinct has been so strongly and rapidly developed in birds in the case of the paper kite and telegraph-wires, how much stronger may we suppose it to be in guiding the bird along its air-path towards that bourne which countless generations of its kind have sought before.

Enough I think has been said to prove the untenability of this new automaton hypothesis. Indeed, the more it is considered the more absurd does it appear. Nothing short of a miracle would be required to cause a gust of wind to take the same Stone Curlew, in the case above cited (and it is impossible it could have been otherwise than the same bird), year after year, from its winter quarters somewhere in Africa and set it down in its former nesting haunt in what is now the middle of a Suffolk wood.

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ON THE OCCURRENCE OF THE SMALLER SOOTY TERN AT THE MOUTH OF THE THAMES.

BY HOWARD SAUNDERS, F.L.S., F.Z.S.

SOME months ago Mr. E. Bidwell, whose name will be familiar to readers of 'The Zoologist,' and who is unremitting in his researches for rarities in the markets and neighbourhood of London, asked me to examine a specimen of a Tern in the possession of a local birdstuffer, named Barton, residing near the West India Docks. It proved to be an adult example of the Smaller Sooty Tern, *Sterna anæstheta*, Scop., a species not hitherto recorded even as a straggler to the British or indeed to the European coasts, and it bore every appearance of having been recently mounted "from the flesh." Mr. Bidwell subsequently purchased it, and at his request I exhibited it at the meeting of the Zoological Society at Hanover Square on the 6th February, 1877. The following letter, addressed to him by the son of the man from whom he purchased it, contains all the information that has yet been obtained as regards the locality where the specimen was procured:—

"The Tern you purchased of my father was brought to him in the flesh by one of the Trinity-House men who had just returned from duty on board a lightship at the mouth of the Thames in September, 1875. My father skinned the bird and brought it to me to stuff. The skin was perfectly fresh then, and portions of the flesh were adhering to it. I cleaned the skin and set it up."

Mr. Bidwell and I interviewed both father and son on the matter, and there does not seem to be the slightest ground for doubting that the specimen in question really was obtained somewhere at the mouth of the Thames as stated. The man who brought it in returned to his duty, and unless he reads this or revisits either of the Bartons with some other bird "out of the common," we shall probably remain in ignorance as to the precise lightship where the bird was taken, doubtless during the equinoctial gales, as it was obtained in September.

There are at present three known species of the Sooty Tern group, the largest and best known of which is—

STERNA FULIGINOSA, Gm. Syst. Nat., i., p. 605 (1788). Its habitat may be described as intertropical, or at most between

40° N. and 40° S. lat., with the exception of the two or three stragglers which have wandered out of their usual limits as far as our coasts (*vide* Harting's Brit. Birds, p. 169). I can detect no difference amongst the large series I have examined from various localities in the warmer portions of the globe, such as the American coasts and islands, the island of Ascension, the coast of Africa, including the Red Sea, the Polynesian Islands, Australia, and the South of Japan, and the accounts of its habits and nidification seem to agree. Its most noted breeding-place is at Ascension, where the great nesting colony known as "Wide-awake Fair" is one of the few attractions of that huge cinder-heap, and excellent accounts of it have been given by various visitors, the most recent being that by Dr. C. Collingwood (Zool. 2nd ser. p. 979—984), and the late Commander Sperling (Ibis, 1868, pp. 286—288). In all cases the bird seems to sit upon a single egg laid upon the bare ground or amongst the cavities of the lava or coral, according to the locality, making no nest whatever, wherein it differs from the Noddies (*Anous*), and as soon as the duties of incubation are ended and the young can fly, away they all go to sea. Being single-brooded birds, it was natural to suppose that they bred but once in a year, and at tolerably corresponding periods in either hemisphere; still one was continually meeting with immature specimens, whose plumage at the date of their acquisition was not at all what it ought to have been if they had been hatched at the normal periods or at those at which the birds had been found breeding by various explorers. The explanation of this apparent discrepancy was given me by Drs. Drew and Purchas, R.N., who had recently returned from Ascension, and on enquiring of Lieut. Mountjoy Squire, R.N., at present stationed there, the statements of my friends were confirmed, *viz.*, "that the 'Wide-awakes' come up from the sea to breed about every eight months, or three times in two years." Probably this is the case in other breeding-places, but I only know it as a fact of this one, and a very remarkable and interesting fact it is. As regards the plumage of this well-known species, it is hardly necessary to say more than that it is sooty black on the mantle, wings and tail, except outer webs of streamers; white on under parts and neck; black on crown and occiput, with a black streak from base of bill to eye, and a broad white frontal band from extending to a little above the eye, *but not beyond it; the* *feet are webbed to the extremities*, and the *young* are for some time *dusky* on the *under parts*. The reason for laying stress on these particulars will be shown in treating of the next species.

STERNA ANÆSTHETA (originally printed *S. anæthetus*), Scopoli, Deliciæ Flora et Faunæ Insubricæ, i. p. 92, No. 72 (1786), ex Sonnerat's Voyages, p. 125, pl. 84, where the species is described as the *Hirondelle de Mer de Panay* (Phillipine Islands), whence it is sometimes called the Panay Tern, *S. panayensis*, Gm. (1788), &c. The range of this species is almost the same as that of its congener, whose example, as we have seen, it has followed in straggling as far as our coast, but the information we possess tends to show that it is rather less oceanic in its habits, and more inclined to hug the shore. In distribution of colour it resembles *S. fuliginosa*, but it is somewhat smaller in size; the mantle and wings are decidedly less sooty, the white from the frontal band extends both *above* and *beyond* the *eye*, and the *web* between the middle and inner toes only extends to the *last* joint of the latter, and does *not* come down to the claw; the *young* also are *light* on the *under parts* on emerging from the downy stage. A woodcut of the above differences in the formation of the feet of the two species will be found in my paper on the *Sterninæ* (Proc. Zool. Soc., 1876, p. 665).

The third species of the group is STERNA LUNATA, Peale, U. S. Expl. Exped.—Birds, p. 277 (1848). It is intermediate in size between the other two, has a more distinctly *slate-gray* mantle, and is altogether washed with a grayish tint; the webs of the feet are similarly incised with those of *S. anæstheta*, to which it is more closely related than to *S. fuliginosa*. Its range, so far as we know it at present, only extends from the Moluccas to the Phenix and Paumatu groups of the Polynesian Islands. I do not know of any specimens in collections in this country, but the Leyden Museum, which is far in advance of our national collection in *Laridæ*, possesses several examples.

The Sooty Terns have been separated generically from the true Terns by Wagler, and as one or other of his generic names have been pretty freely adopted, it may be edifying to consider them for a moment, for they supply an excellent sample of the way in which our scientific nomenclature is encumbered by useless and confusing subdivisions. First, Wagler took the MS. description, or perhaps even the type specimen, of J. R. Forster's *Sterna serrata*, which he identified, and correctly, with *S. fuliginosa*, but as that individual specimen had a claw somewhat notched and jagged from contact with rocks, he formed for its reception the genus *Onychoprion* (Isis, 1832, p. 277), from ὄνυξ, nail, πρίων, a saw. He then took another of Forster's types, named in his MS. *Sterna guttata*, which this time happened to be an example of *S. fuliginosa*, in which the accidental serration above referred to was not observable: here it seemed to him was another *structural* (!) difference, on which he accordingly based the genus *Planetis* (Isis, 1832, p. 1222), from πλάνητός, wandering. Not yet satisfied, he took a third specimen of *S. fuliginosa*, and, almost on the same page, gave it generic distinction under the name of *Haliplana* (Isis, 1832, p. 1224), from ἁλίπλανος, sea-wandering. That was pretty well for one systematist's work with a single species: others have placed the same bird in two other genera besides *Sterna*, but let that pass.

With regard to the propriety of separating the Sooty Terns generically from the other Sea Terns, I would remark that I can find no *structural* difference in the former, their only peculiarity consisting in their coloration,—a distinction insufficient in my opinion for the formation of a genus,—and even in that respect there is a species found at Alaska, *Sterna aleutica*, which, with head markings and mantle similar to those of *S. fuliginosa*, has a white rump and tail, thus forming a connecting link. But although there is no well-defined structural difference between *S. fuliginosa* and the typical Sea Terns, there actually exists a real noticeable structural variation in the formation of the feet of such closely allied-species as *S. fuliginosa* and *S. anæstheta* — forms which the most persistent genus-maker would hardly venture to place in different genera — yet it is clearly shown that they differ more markedly *inter se* than they do from typical *Sterna*.

Under these circumstances, I would submit it to the judgment of ornithologists whether it is not advisable to disregard Wagler's genera, and to retain the Sooty Terns in the genus *Sterna*.

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ON THE ANATOMICAL CHARACTERS DISTINGUISHING THE SWALLOW AND THE SWIFT.

By A. H. Garrod, M.A., F.R.S.

It is not a difficult task, whatever the department of the subject which may be under consideration, to classify thinking naturalists in one or other of two divisions, dependent upon the nature of the facts which they, from opportunity or inclination, are in the habit of specially emphasising. There are those who devote themselves to the study of the animal as a whole, its external conformation, its habits, and its haunts. They collect specimens of allied species and preserve them according to an arrangement which is liable to be modified by the experience of collectors generally, and from rumours which reach them as to the results arrived at by those of the class to be referred to immediately. These latter lay but little stress upon superficial resemblance and specific differences, devoting their attention to those facts brought to light by osteological comparison or the differences of deep-seated soft parts, which throw light upon the mutual relations of the larger groups into which the subjects of their study are generally acknowledged to fall.

Now and again the opinions of these two classes of naturalists are apt to be diametrically opposed. The one, as the result of his experience that intimately allied forms closely resemble one another, is apt hastily to draw the illogical conclusion that the converse of the proposition is equally true, and that therefore animals which closely resemble one another in contour and habit must be very nearly related. The other, basing his conclusions on different data, does not run the risk of being misled by the deceptive argument, and forms an opinion which has therefore the average value of his productions.

As an excellent example of the above-mentioned opposed notions of naturalists, the relation of the Swallow to the Swift stands prominently forward. By systematic ornithologists and collectors of birds until recently it has always been the habit to place these birds in juxtaposition, contrary to the opinion of anatomists, just in the same way that the Sand Grouse is grouped by them with the *Tetraonidæ*, the Petrels with the Gulls, and the Secretary Bird with the Caracaras.

Let us look into the subject a little more closely. The common Swift and the common Swallow are birds which intimately resemble one another in many respects. Their size and general coloration are much the same. In both the beak is very broad and short; the first bone of the pointed wing, which corresponds to the human upper arm bone, being also particularly short; whilst the bones of the wing which agree with those of the fore arm—the radius and the ulna—are proportionately very long. In both the feet are small, and the power of progression on the ground feeble, each living almost entirely on the wing, making the smaller insects its staple article of food, and each building its nest in walls or eaves of roofs, not in the branches of trees.

This collection of external resemblances would generally be accepted as sufficient evidence that the Swallow and the Swift are closely allied birds; in other words, that in the pedigree of the bird-class they sprang from a common ancestor, at some, zoologically speaking, comparatively recent time. Further, the fact that the two birds are described next to one another, or placed side by side in collections, by many of those who are in the habit of employing a systematic method of arranging the different genera, would show that such ornithologists consider the relationship between the Swallow and the Swift to be more intimate than that between either of these birds and the Sparrow, Crow, Starling, Lark, &c. But all these last-named birds are what are known as Passerine; in other words, they possess certain anatomical peculiarities in their organization, found in them all, and in no other group of birds. If, therefore, the Swift and the Swallow are more nearly related to one another than either is to any other passerine bird, then, as the Swallow is most certainly passerine, the Swift must be so also.

But certain naturalists assert that the Swift is not a passerine bird at all, and, if they are correct, it is evident that the Swallow and it cannot have anything to do with one another. Upon this assumption, therefore, the passerine Swallow is much more closely related to the Sparrow, the Crow, and the Lark than it is to the Swift.

The question then presents itself—Is it really the case that the importance of the deep-seated anatomical resemblances between the Swallow and the Sparrow, and of the differences between the Swallow and the Swift, is sufficient to justify us, notwithstanding the external similarity between the last-named birds, in believing that the first-mentioned are truly more intimately related the one to the other?

It may be worth while taking a rapid glance at what some of these most important anatomical resemblances and differences happen to be. One of them is the manner in which the feathers are arranged on the skin. Most of us know that, unlike the hair upon a cat or other quadruped, the feathers of a bird are not uniformly distributed over the surface of the body, but grow in linear clusters called tracts, with naked intervals, termed spaces, between them. This may be readily verified by plucking, say a Sparrow, and noticing the thick and opaque light-coloured bands formed by the thickening of the skin surrounding the holes out of which the feathers have been extracted. Between these tracts the skin is seen to be thin and translucent, forming naked spaces through which the colour of the underlying muscles is apparent.

The careful study, some five and forty years ago, by the eminent German ornithologist, C. L. Nitzsch, led him to the conclusion, among others, that these feather tracts are arranged upon a very different plan in the Swallows to what they are in the Swifts, whilst in the Sparrows and their allies they very closely resemble the Swallows. Further he showed that in this feature the Swifts and the Humming Birds are almost identical.

Again, the breast-bone or sternum in birds is much expanded to give origin to the powerful muscles of flight. In both the Swallow and the Sparrow, as in passerine birds generally, its usually oblong figure is modified by the presence of two deep notches, one on each side of the keel, in the posterior margin. But in the Swift there are no such notches to be found, the posterior margin being entire, and in other respects it differs from the same bone in the *Passeres*, whilst in all it resembles the Humming Birds.

In the Sparrow and the Swallow, again, as in the great majority of the passerine birds, there is at the lower end of the trachea or windpipe, where the bronchi which place it in communication with the lungs arise, an elaborate special mechanism which is known as the muscular organ of voice or lower larynx, by which they have the power—although they do not all employ it—of modulating their note so as to produce a song: this is not found in the Swifts.

In man the greater part of the alimentary canal is composed of a tube of small diameter—the small intestine—which is continued onwards as a more capacious one, the large intestine. These two are not simple continuations one of the other, but the former enters the latter obliquely, the nearer end of the large intestine remaining free as the "blind gut" or cœcum. In the Swallow and Sparrow, as in all the *Passeres*, instead of there being a single cœcum at the place of junction of the two intestines, there are two. These are not found in the Swifts, nor in the Humming Birds.

In the Swallow, the Sparrow, and all their true allies, it is always the case that the tendons which contract up the last joints of the toes are so arranged that the birds have the power of folding the toe which corresponds to our great toe (the one directed backwards) without moving any of the others. In the Swift, however, whenever the great toe (the hallux) is fully flexed, it is impossible that the other toes should remain opened out, because the two muscles which act on one and the other are bound together by a tendonous band.

In the Swallow, the Sparrow, and most singing birds the number of feathers in the tail is twelve. In the Swifts and Humming Birds the number is always ten—another important difference.

In the Swallow also, as in all the passerine birds, there is a slender muscle running through the thin triangular membrane of the wing between the arm and the fore arm, which is quite peculiar in the manner of insertion or attachment, no other birds possessing the same arrangement. In the Swift this muscle terminates in quite a different manner, here again resembling the Humming Birds exactly.

Taking these several characters into consideration, and realizing how little they are susceptible, on account of their deep-seatedness, to the influence of slight external changes in the mode of life of the species, we are inevitably driven to the conclusion that their weight is overwhelmingly greater than that of the superficial similarity which is so readily brought about by the similarity of the circumstances under which the two species are accustomed to live, and that the resemblances between them are, so far as their constitutions are concerned, dependent only on the fact that they both have—with different pedigrees—arrived at a superficial similarity in contour because they subsist exclusively on the same food.

ON THE OCCURRENCE OF THE CENTRINE SHARK OFF THE COAST OF CORNWALL.

By Thomas Cornish.

I have recently obtained from a trawler a specimen of the Centrine Shark (*Squalis centrina*), the first, so far as I can ascertain, taken in English Seas. It was trawled up from a sandy bottom in twenty-six fathom water near the Wolf Lighthouse. It is at all events so rare a fish that I feel justified in giving you some account of it.

The feature which at once distinguishes the fish from all other sharks which I have seen is the presence within the skin and through the centre of the two dorsal fins of a stout spine, the end of which projects beyond the fin. The spine of the first dorsal starts from the base of the horizontal middle of the fin and inclines forward; the spine of the second dorsal starts from about the same relative position and inclines backward; so that each fin is a complete spritsail with the sprit rigged.

The length of my specimen is two feet one inch, over all (Bloch says the fish reaches a length of three or four feet). Its girth immediately before the pectorals, nine inches and four-eighths; girth behind the first dorsal, twelve inches. The head is depressed and broad. The eyes are large and long, with bright green round pupils and no nictitating membrane; over them the orbit is a strong bony ridge, and immediately behind them are blow-holes. Behind them and in front of the pectorals are five very small gill-apertures. The lips are very white and very fleshy and entirely cover the teeth. Bloch apparently described his fish from a specimen dead long enough for the fleshy lips to have dried back.

The mouth is very small. The teeth in the lower jaw are equilateral and in two rows, the outer one consisting of much smaller take than the inner one. The teeth in the upper jaw are numerous and in irregular rows and sharp-pointed, and I think all of them are serrated, but they are all so small that I am not certain about this. The first dorsal stands just over the pectorals, and the second just over the ventrals, and each dorsal has through it the spine I have described, and is free at the rear of the base for about half an inch. The belly is broad and flat; the pectorals and ventrals lie flat out from it, and between them on each side there is a strong cartilaginous ridge, forming—with a similar one across between the pectorals—a flat space resembling the belly of the Monk (or Angel-fish), but harder.

The ventrals are distinct, and on the inner side of each is a rudimentary clasper. There are no anals, and the caudal is single-lobed, except that just where the fleshy part ends there is a slight indentation. The nostrils are large, underneath the snout, in advance of the mouth, and divided into two lobes each by two cutaneous flaps overlapping each other. Within is visible a very delicate membrane, something of the shape of a fern-leaf or the back-bone of a sole. The lateral line starts from the extremity of the nozzle, passes over the orbit of the eyes in a pale broad line down the side with a slight curve, and is entirely lost just behind the second dorsal.

The colour is dark cinereous in blotches over the back, and light cinereous on the belly, and the skin is the roughest I ever saw on any shark. The dorsals are very long and high. The first dorsal in my specimen is four inches and a half long at the base, three inches and four-eighths high at its extreme rear (where it is highest), and the spine is two inches and seven-eighths long; and the second dorsal, just five inches to the rear of the first, is nearly about the same size. As I have said, these large standing dorsals at once distinguish the fish, and if it ever gets common enough to require an English name it should be called the Spritsail Shark. Bloch mentions it as a Mediterranean species, and also as occurring in France, in the Northern Ocean, but I do not understand whether, by the Northern Ocean, he refers to the English Channel or the North Sea. My specimen is in the hands of Mr. Vingoe for preservation.

[The occurrence of *Squalis centrina* on the British coast is a new and highly interesting fact. This shark is an inhabitant of considerable depths, and is not uncommon in the Mediterranean, but we believe has not hitherto been found further north than the latitude of Lisbon. It is to be hoped that this important specimen will be well preserved and deposited in some public Museum.—Ed.]

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OCCASIONAL NOTES.

The Natural History of Donegal.—The paper on the Natural History of Donegal, by Mr. James A. Mahony, which you have introduced to the readers of 'The Zoologist,' has attracted my attention, as well by its style as by its statements; and taking as I do some little interest in Irish Natural History, it would, I believe, be prejudicial to the cause of truth were some of its passages allowed to go unnoticed. The descriptive paragraphs on the Physical Geography, Geology, and Botany of Donegal would be more appropriately criticised outside the pages of 'The Zoologist;' but coming to the list of Mammalia, and neglecting its omissions, we are informed that "The Squirrel, Ferret, Fox, Weasel, Bat and Hedgehog are often to be seen, and it seems to be quite true that there are no Toads, Moles or Snakes in Ireland." If the Squirrel has reached Donegal, it is quite a new locality; and if particulars were given as to when, where, and by whom it was seen, the information would be more valuable. The Ferret is not wild in Ireland; and Thompson's cautious statement as to the Weasel has rather been confirmed than controverted of late years. The Natterjack Toad is found near Dingle, County Kerry. As to birds, it may be said that the casual manner in which the Tawny Owl is alluded to shows rather Mr. Mahony's ignorance as to its great rarity in Ireland than the accuracy of his observation. The Sedge Warbler is generally regarded as the "Irish Nightingale," and not the Thrush; and the curious assertion about the "Common Crane" is no doubt correctly explained in the Editor's note.—Richard M. Barrington (Fassaroe, Bray, County Wicklow).

Natural History of Donegal.—Allow me to offer a few remarks upon the notes on County Donegal, published in your last number (p. 149), as I think it very desirable to correct some errors in the zoological part. In the first place, I and other Irish naturalists would be much obliged to Mr. Mahony if he would inform us in what part of the county Squirrels are found in a wild state, and whether he himself saw them or took the statement on hearsay? So far as I know, the Squirrel is not found in any part of Donegal. The few Irish counties in which I have heard of its occurrence are Wicklow, Queen's County (near Portarlington), and Kerry. By Ferret, I suppose your correspondent must mean the Marten (*Martes abietum*), which is still tolerably common in the wilder parts of Ireland; and of course the Stoat is intended when the Weasel is mentioned. Here I will take the opportunity of correcting a mistake which has somehow got about—that there is an Irish specimen of the Weasel in the Museum of Trinity College, Dublin. This specimen I myself sent up from Tyrone, and received in return an intimation that it was the true Weasel, and the first known Irish example: it is, however, but a small Stoat. I wish your correspondent would tell us what species of Bats he has found in Donegal. The Hairy-armed Bat has been found in several widely-separated parts of Ireland, so that it may be discovered in other localities if naturalists would only take the trouble to look for it: at present it has been obtained only in the counties of Wicklow, Dublin, Armagh, and the town of Belfast. As for birds, the Tawny Owl is not proved yet to occur in Ireland, even as an accidental visitor, the only evidence on this subject which I have obtained being two eggs in the collection of Mr. Gage, of Rathlin, which that gentleman kindly entrusted to me to send to Prof. Newton, who considers that they probably belong to the Tawny Owl. These eggs are stated to have been found in a wood near Ballycastle, County Antrim. Perhaps, however, Mr. Mahouy means the Long-eared Owl, which is a very common Irish bird. I have never before heard the Song Thrush called the "Irish Nightingale," the bird which is generally called by that honourable title being the Sedge Warbler. Again, out of some hundreds of geese which I have seen from Loughs Swilly and Foyle, I never came across more than half-a-dozen Bernicles; and your correspondent probably means the Brent Goose, which is very common, and is called Bernicle by the peasantry. On p. 151, third line, *Chylodadiæ* should be *Chylocladiæ:* and lower down on the same page, *Eclimus spheræ* is, I presume, a misprint for *Echinus sphæra*, though I have never found this Urchin anywhere except reposing on sand or rocks, and imagine that a large one would find some difficulty in "prowling over" the fronds of *Laminariæ*.—J. DOUGLAS-OGILBY (Portrush).

[We have received a third letter to the same effect from an esteemed correspondent, who does not, however, desire its publication. By "Ferret" no doubt is intended the Polecat, an animal which, according to Thompson, is "not positively known as an Irish species," although said to inhabit the wild woods of Kerry, and to have been killed in at least one instance in the County Down. The Weasel is another animal whose existence in Ireland there is reason to doubt, although, as we have elsewhere pointed out, Mr. Bell, in his 'History of British Quadrupeds,' does not allude to it. Mr. Andrew Murray, in his 'Geographical Distribution of Mammals' (p. 114) says that the Weasel formerly inhabited Ireland, but is no longer found there. Macgillivray averred that the Weasel is generally distributed in Ireland, but Thompson, on the contrary, remarks that he never met with it there, nor does he consider that it has been proved to be a native, although it may be so. The Stoat, which is called Weasel in Ireland, is common there. It should be noted that the larger size, darker colour, and the black tuft at the end of the tail, will at all seasons distinguish the Stoat from its smaller relative. As regards the Squirrel, we have notes of its occurrence in the Counties of Dublin, Wicklow, Wexford, and Longford (where it was introduced in large numbers, at Castle Forbes, by either the father or grandfather of the present Earl Granard). It has been introduced also at Carrickglass, County Longford, and Burton Hall Woods, County Carlow. As regards the County of Dublin, Squirrels are said to have crossed over from the County Wicklow some ten or fifteen years ago. Concerning all these animals, it would be very desirable to have further particulars, and we trust Mr. Mahony, at his leisure, will if possible supply them. So little comparatively has been published on the native mammals of Ireland, that any information respecting their existence, distribution, and scarcity, or otherwise, in the sister isle will be welcome.—Ed.]

Mammalia Scotica.—At a meeting of the Glasgow Natural History Society, held on the 27th March last, Mr. James Lumsden, F.Z.S., read a paper "On the Mammals of the Neighbourhood of Lochlomond." He said that in the country which borders on Lochlomond there has been found a large proportion of the land mammals of Britain, but as in other districts several species which were at one time common are now rarely if ever met with, the advance of agriculture and the greater attention paid to the preservation of game having been most destructive to many of our wild animals, as well as to our rapacious birds. Within late years a great change has taken place in the mammalian fauna of this district. At one time wild cats were well known, and martens, if not often seen, betrayed their presence by their thieving habits; polecats were not uncommon; rats (excepting a few of the harmless *Mus rattus*), rabbits, and squirrels were unknown; and mountain hares were seldom met with. How changed it is now! The wild cat, marten and polecat extinct, and the brown rat swarming in and around all farm-steadings, rabbits plentiful on hill and low country alike, and the mountain hare numerous on all the higher ranges. Squirrels are also common in all the plantations, and are extending their distribution. The nature of the ground around Lochlomond renders the district peculiarly suited for all kinds of mammals. In the agricultural land at the southern end of the Loch are found moles, shrews, mice and voles, while the more rugged ground at the northern end gives shelter to the wild animals and mountain hares. So far as is known no complete list of the mammals found throughout the Lochlomond district has ever been drawn up, although the subject has not been neglected by naturalists and others. Mr. Lumsden then submitted a list of twenty-six species found in the district, and stated that in the notes accompanying it he had not attempted to describe the habits of any of these, as this had already been ably done by others, but had only endeavoured to record the present as compared with the past state of the mammalian fauna in the particular neighbourhood which he had explored.

Curiously Coloured Mole.—A very pretty variety of the mole was brought in to be stuffed on the 17th February. Its fur was exactly the colour of orange-peel; it had a reddish stripe down the belly and a few black stripes across the back. Unfortunately it was not sent till too far gone to be preserved. The birdstuffer informs me that he has had many curious varieties of the mole sent to him, but that this is by far the handsomest he has seen.—C. Matthew Prior (Bedford).

[Mr. Bell, in the second edition of his 'British Quadrupeds' (p. 139), notices several remarkable varieties of the mole, and amongst others the variety here described. He says, "It is found of a deep black colour, of a mouse-colour, dark olive-brown, pied, yellowish white, and wholly or partially orange."—Ed.]

The Merlin in South Wilts.—During the past winter I have had four notices of the occurrence of the Merlin in the immediate neighbourhood of Salisbury, which either proves that this bird is commoner in the district during the winter months than I at all realized, or else that there has been an unusual immigration of the species during this particular season. In November a fine male bird was shot by Mr. Powell, of Hurdcott House, some six miles from Salisbury; and in the same month another specimen was brought to the stuffer at Warminster, also a male bird. On the 2nd of January, 1877, I had a nice hen bird sent to me, also from Hurdcott, which had been shot by Mr. J. A. Tyndale Powell, and is now in the hands of Hart for preservation. The same gentleman, while shooting with a friend on January 13th, discovered a fourth specimen, a hen, much brighter in colour than the one he had previously sent me. It had been shot by the keeper about a fortnight previously, in the adjoining wood, and was hung up by the head on the keeper's gallows. I am glad to find from this that the Merlin is not so uncommon in the South as I at first thought. I have only noticed it myself once since I have been living in these parts, now some sixteen years, when I saw a hen bird chasing a Sky Lark, in pursuit of which it made fourteen distinct stoops, the end of the chase being hidden from me by the trees. Some little time back I wrote to Hart, of Christchurch, to enquire about the prevalence of the Merlin in the Christchurch neighbourhood, and he wrote me back word "Merlin and Hobby killed frequently," and on making a second enquiry of him he wrote "I find the Merlin is nearly as often killed as the Hobby; possibly the Hobby is killed oftener, but does not find its way to me," and during October, when at Christchurch myself, he showed me several specimens, one, a beautiful male bird, which he had himself shot while attacking his poultry, and which had not a single intermediate bar on its tail, thus resembling that of an adult male Kestrel, only blue in shade. No doubt it occasionally breeds in the New Forest.—Arthur P. Morres (Britford Vicarage, Salisbury).

[Mr. Wise, in his 'History of the New Forest' (p. 267), notices the fact of the Merlin occasionally breeding in the New Forest. He says in 1859 and 1861 Mr. Farren received two nests with three eggs, taken in old pollard hollies growing in the open heath, which in every way corresponded with those of the Merlin, being considerably smaller than those of Kestrels. Unfortunately, however, he could not procure the parent birds, and the fact of the Merlin's nesting remained doubtful. In 1862 he was at last successful, and on May 22nd discovered a nest placed in the hole of a yew, also containing, like the others, three eggs, from which the male was shot. The important fact, however, to be noticed is that, as Temminck remarks, the Merlin in a woody country builds in trees, whilst in the north of Britain, where there is no timber, it adapts itself to the country and lays on the ground.—ED.]

PURPLE GALLINULE IN SOMERSET.—Under this heading, at p. 178, I see the Rev. M. A. Mathew records the occurrence of this bird at Badgworth, in this county, in August, 1875. Lest Somerset should be credited with two Purple Gallinules,—possibly with three, for Mr. Mathew says something about another having been seen when this one was taken,—I think it worth while to mention that this bird was recorded in the February number of 'Science Gossip' for 1876, and in the following number I made some remarks on the occurrence, and suggested the extreme probability of this bird being an escape, and from enquiries I have since made I see no reason to alter this opinion. I may add that there is no mention in the original notice in 'Science Gossip,' which gives a rather circumstantial account of the capture, of a second bird having been seen at the same time. This, therefore, as a story seldom loses by repetition, may be only one of those little additions which often creep into records made so long after the event. It strikes me as just possible that this bird may have escaped from the same place as the South American Rail (*Aramides cayennensis*), mentioned in the January number of 'The Zoologist' for this year by the Rev. A. C. Smith; the distance is not at all too great, and the birds may have escaped from some intermediate place. In his notice immediately preceding the one above quoted, Mr. Mathew laments the slaughter of Owls in the neighbourhood of Taunton. In this lamentation I quite agree; but Mr. Mathew is wrong in stating that his friends the Owls are without protection. If he will look at the Wild Birds Protection Act of 1872 he will see that the word "Owl" does occur in the Schedule, and as there is no specific limitation, both the Barn Owl and the Brown Owl—indeed all the British Owls—enjoy the protection of the Act. The two Bird Acts are very little known, and I am glad to see that you have reprinted the Act of 1872 with that of 1876.—CECIL SMITH (Bishop's Lydeard).

[Specimens of the Purple Gallinule have on several occasions been found at large in this country, but have generally been regarded as escaped birds. One, shot near Campbeltown, in Argyllshire, in December. 1863, is mentioned in Mr. Gray's 'Birds of the West of Scotland,' p. 337. In August of the same year one was killed at Rowner, in Hampshire

('Zoologist,' 1865, p. 9418, and 1867, p. 829). On the 25th September, 1876, a Purple Gallinule was shot near Grange in Furness, Lancashire, by Robert Allan, gamekeeper to Mr. E. Mucklow, of Castle Head, Grange. and was preserved by Kirkby, the taxidermist, of Ulverston. We are further informed by the Rev. E. W. Dowell, of Dunton Vicarage, Fakenham, Norfolk, that an adult bird of this species was killed in one of the head streams of the Wensum River, at Tatterford, early in October, 1876. Mr. John Marshall, of Belmont, Taunton, has a bird of this species in his collection, which he purchased some years ago at Mr. Troughton's sale, and which was labelled as killed in Ireland. Thompson, in his 'Natural History of Ireland' (Birds, vol. ii. p. 331, note), refers to a specimen of this bird which was found about the first week of November, 1845, lying dead in a ditch near the village of Brandon, on the coast of Kerry.—ED.]

OCCURRENCE OF THE LITTLE OWL IN SUSSEX.—On the 16th March last I saw in the shop of Mr. Pratt, naturalist, Brighton, a specimen of the Little Owl (*Noctua passerina*), which had been shot the previous evening in an orchard close to the town of New Shoreham. It was in most perfect plumage, not showing the slightest sign of having been in confinement. On dissection it proved to be a female, and the ovary contained about thirty eggs, of which four were considerably advanced. The stomach contained nothing but a few grains of gravelly detritus. This is only the second specimen I have met with, or heard of as having been killed in this county. The first, a male in my collection, was obtained, also in an orchard, near Fletching Park, in May, 1843. The female bird, which I have now secured, is rather the larger bird of the two.—WILLIAM BORRER (Cowfold, Horsham).

[The synonymy of this species, is extremely confused, scarcely two writers being agreed as to the name it should bear. It is clear, however, that it is not the *Strix passerina* of Linnæus, which is a perfectly distinct and much smaller European species, and has not been met with in this country. In his new edition of Yarrell's 'British Birds,' Prof. Newton, following Prof. Sundevall, identifies it with the *Strix noctua* of Scopoli, and points out (vol. i. p. 118) that as the generic names *Athene* and *Noctua* are preoccupied in Entomology, its proper designation, according to the Rules of Zoological Nomenclature, is *Carine noctua* (Scopoli).—ED.]

NOTE ON THE SHORT-EARED OWL.—On the 3rd April a Short-eared Owl was sent to me by an experienced and intelligent gamekeeper in the parish of Northrepps, Norfolk, with a note, from which the following is extracted:—"Lately we have seen where three Partridges have been killed, and yesterday morning the remains of a fourth were brought to me, which, after carefully examining, I considered to be the work of an Owl, so a trap was set in the evening, baited with the remains of the Partridge. The trap was watched, and just after dusk an Owl was seen working the field over: it then alighted on the ground, when a pair of Partridges were seen running away from the Owl, when the Owl flew and attacked one of them, but after a few seconds the Partridge got away, the Owl pursuing it on the wing for a short distance. After this the Owl came and hovered over the baited trap, and whilst doing so was shot. I always thought that these Owls only preyed on rats, mice, larks, &c., but I now believe they destroy game." On dissection the Owl proved to be a male, and the stomach was empty.—J. H. GURNEY (Northrepps Hall, Norwich).

PARTRIDGES COLOURED LIKE RED GROUSE.—At a recent meeting of the Natural History Society of Glasgow Mr. Harvie Brown exhibited two extremely handsome varieties of the Common Partridge (*Perdix cinerea*), forwarded to him by Mr. George Sim, naturalist, Aberdeen. These birds, along with four others, were shot by General Shaw, on the estate at Glasshaugh, near Portsoy, in the beginning of October last. They had been seen in different covers for some weeks before being killed, and since then the people in the neighbourhood reported to General Shaw that similar birds had been seen in previous years about the same neighbourhood. Mr. Sim says that the females, of which there were four, were all alike in plumage, being brown on the breast, while the upper parts are beautifully marked with transverse bars of light brown over a ground colour of drab—the brown being of greater density in some individuals than in others. The male differs markedly from the female, having a preponderance of the rich grouse-like chestnut-brown on the back, as well as on the breast. Mr. Sim had compared these birds with the description and plate of *Perdix cinerea*, var. *montana*, in the 'Naturalist's Library' (vol. iv. pl. 2), and found them to agree with that variety, which Sir William Jardine states is common on the plains of the Zuyder Zee in Holland. Mr. Harvie Brown observed that examples of the same variety had been found on the higher grounds of Forfarshire bordering the moors, and often among the heather, where they are known as "Hill Partridges" (see Gray's 'Birds of the West of Scotland,' p. 242). He suggested that the variation had been induced by food, looking at the almost perfect grouse-like colour, especially of the male; but added that if these birds are identical with Sir W. Jardine's var. *montana*, it would be difficult to account for the variety arising from food supply when it is found upon the low-lying flats of Holland, and he was at a loss to know why it was named *montana*, unless it was discovered in a more mountainous country than Holland, where the summit of the highest hills are only some thirty feet above the level of the sea. These two birds weighed 13½ and 15 ounces respectively. Extent of wings, in both, 19½ inches; bill to the point of tail, 12½ inches.

[Mr. Harvie Brown seems to have misunderstood his author. Sir William Jardine in the work quoted does not say that this variety is "common on the plains of the Zuyder Zee," but speaking of the variation of plumage to which the Common Partridge is liable, he says (p. 80), "those birds which frequent and are bred on the marshy grounds of the Zuyder Zee and mouth of the Meuse are less in size and of a duller tint than those found in the drier lands of Belgium." He observes correctly enough in his very first sentence that "this variety has been said to be more frequently found in alpine districts than in lowlands, but they are known to mingle occasionally with those of the common plumage." Some years ago we received a Partridge of this colour, which with others like it had been shot in Northumberland: it is preserved in the collection of Mr. Bond.—Ed.]

Cuckoo in Reddish Brown Plumage in Spring.—In every point of its economy the Cuckoo seems destined to perplex naturalists. The occasional occurrence of brown Cuckoos in the spring must be known to everyone who has made a study of British birds. I say "brown" as contrasted with the adult gray plumage. They generally are more rufous than the young of the year, these brown birds differing from them about as much as the young in September often differ from one another. I have seen several of these curiously-coloured Cuckoos, and I have two in my possession, one a male shot at or near Cambridge in 1868, and another, the sex of which was not ascertained, shot at Bridlington, in Yorkshire. The latter measures:—Wing, 7¾ inches; tarsus, ½ inch; culmen, ⅝ inch. Both are small, under-sized birds, and I may add that both have the occiput blotched with white, but I do not know that this is curious, as I have often noticed it in young Cuckoos in September.—J. H. Gurney, Jun. (Northrepps Hall, Norwich).

Dartford Warbler in Suffolk.—On the 6th April I came upon a pair of these little birds among some furze-bushes on the heath near Blaxhall, Suffolk. One of them (probably the male) was flying restlessly from bush to bush, something in the manner of a Stonechat or Whinchat, uttering all the while a sort of scolding note, similar to that of many of the warblers when nesting: the other was shyer, and kept diving into the bushes, not allowing me to have a good view of her. This is the second time I have met with this bird near here. (See 'Zoologist,' 1874, p. 3865). Mr. Stevenson, in the same volume (p. 3914), mentions a specimen shot on Nacton Heath as being the only other Suffolk example he was aware of; so that the above-mentioned pair make the third occurrence, so far as I know, of this species in this county.—G. T. Rope (Blaxhall, Wickham Market).

Rednecked Grebe in Essex.—On February 3rd I observed a Rednecked Grebe on the large sheet of water in Wanstead Park. My companion and myself, both provided with telescopes, were able to approach within easy range by taking advantage of its diving. The bird was unmistakably a Grebe, and in order to verify the species with certainty I made a rough sketch on the spot, noting the following characters:—The white on the throat and cheeks clearly defined and running back under the black crown of the head, nearly to its termination in a slight crest, the latter made more apparent when curled up by puffs of wind. The dull red of the neck merging into the dark colour of the back and wings, and blending below with mottled markings into the pure white of the breast. Under parts pure white, joining the conspicuous white patch on the wing (the secondaries). On examining the specimens in the British Museum, this bird appeared to correspond most closely in size and colour with that recently added to the collection by Mr. Sharpe, and obtained from the North of Europe, but the under parts were more purely white than in that example. The Grebe was on the same piece of water the following day, but too distant for satisfactory observation; on being disturbed it flew with considerable power, alighting again in the middle of the pond; by the next day it had left. I may mention that on January 30th about thirty Herons returned to the heronry in the woods of the Wanstead Estate.—ARTHUR LISTER (Leytonstone).

[So far as our experience goes, the Rednecked Grebe is the rarest of all the Grebes that reside in or visit the British Islands, and is only found here in winter. We have occasionally met with it in the tidal harbours and creeks of the Sussex coast when out after wild-fowl in January and February, but have never seen more than one or two together at a time. It rarely remains here late enough in spring to display the complete breeding plumage.—ED.]

VARIETY OF THE SAND MARTIN.—At p. 106 Mr. Corbin mentions the occurrence of a variety of the Sand Martin. My father has in his possession a peculiar variety of this bird, which I caught a few years ago. I first saw it hawking for flies in the vicinity of a water-worn bank, in which a somewhat numerous colony breed annually, and after watching its untiring—though in my judgment not very happy—motions for some time, I at last succeeded in capturing it in one of the nests. Its darker relations seemed to regard it with intense dislike, chasing it with more or less anger whenever it came near them. In this bird the upper plumage is of an uniform bluish white, the lower parts from the beak to the vent of a pure glossy white.—E. P. BUTTERFIELD (Wilsden).

WHITE SKY LARK AND OTHER BIRDS NEAR YORK.—Mr. Ripley, the birdstuffer here, has lately received for preservation a Hawfinch, a pure white Sky Lark, and a pied Blackbird. The Hawfinch, a female, was shot during the early part of February, within four or five miles of York: it is rather a rare bird here. The Sky Lark, which I found to be a female, was shot on Askham Bog near here, about the 15th of the same month. The whole of its plumage was pure white: the bill, legs, and claws were extremely light-coloured, but the iris was rather dark. The Blackbird, a male, was shot about the same time, not far from here, and it was rather curiously pied. The neck and head were pure white, with the exception of a few light brown feathers on the front of the former. By far the larger number of the feathers on the breast, back, and wings were white, but the tail was of the usual colour.—Robert M. Christy (20, Bootham, York).

Mergansers and Divers Inland.—A Red-breasted Merganser and a Black-throated Diver were shot near Banbury in January this year. The former at Edgecote, by one Harrod, a gamekeeper, the latter on the Cherwell, by a boatman named Hunt.—C. Matthew Prior (Bedford).

Little Bittern and Spotted Crake in Oxfordshire.—When in Banbury one day in December, I was asked to go and see a specimen of the Little Bittern which had been shot near that town, on the Cherwell, by one Frederick Murray, a boatman, on the 27th October, 1867. It was much knocked about, having been shot the moment it rose, but the shattered bits were collected together and stuffed by W. Wyatt for its captor. I was also shown three specimens of the Spotted Crake, which I am informed is not unfrequently obtained in the vicinity, and one of which I purchased.—Id.

Land and Freshwater Shells of Scotland.—At a meeting of the Natural History Society of Glasgow, held on March 6th, Mr. David Robertson exhibited specimens of fresh-water shells, the first of which, the little bivalve *Pisidium fontinale*, var. *Henslowana*, was taken in the Glasgow and Paisley Canal. It is the *Pisidium Henslowana* of Shephard, and was first discovered by Professor Henslow in the River Cam, near Cambridge. It occurs in many of the northern, eastern, and south-western counties of England, as well as in South Wales and Cork, but hitherto it has not been discovered in Scotland. Such small shells are apt to be mistaken for closely allied species, but in this case the most cursory inspection would discover the remarkable little elevated plate on each valve near the umbos, which at once distinguishes it from all its congeners. The other shell is *Planorbis complanatus*, and is found moderately common in Lochend Loch, Edinburgh. Mr. Robertson also showed *Helix villosa*, a land shell, four living specimens of which were taken on the flat ground or moors near Cardiff, by Mrs. Robertson, and not being able to refer them to any British species they were submitted to Mr. Jeffreys, who pronounced them to be *Helix villosa* (Drap.), and has recorded the species in the 'Annals and Magazine of Natural History' for February as an addition to our British Mollusca. *H. villosa* inhabits Germany, France, and Switzerland, and it often occurs at a considerable height above the sea. Mr. Jeffreys refers to *H. alpestris*, a British variety of *H. arbustorum*, as having similar habits. It is met with on the Swiss Alps, in the region of perpetual snow, as well as on the marshes and banks of English rivers, an example of the great elasticity of such animals in accommodating themselves to different conditions of habitat and temperature.